

REMARKS

The enclosed is responsive to the Examiner's Office Action mailed on February 18, 2009. At the time the Examiner mailed the Office Action claims 1-7 were pending. By way of the present response the Applicants have:

- 1) amended claims 1-7;
- 2) canceled no claims;
- 3) added five new claims, 8 - 13. Support for the newly added claims are found in the Specification and, hence, no new matter has been added.
- 4) argued the patentability of the independent claim 1.

As such, claims 1-13 are now pending. The Applicants respectfully request reconsideration of the present application and the allowance of all claims now presented in view of the amendments and following arguments and remarks.

Amendments

The specification is amended to correct the grammatical and idiomatic errors. A marked-up version and a substitute version of the Specification are enclosed with this paper. No new matter is introduced by this Amendment.

Claim Objections

Claim 2 and 3 were objected as being of improper dependent form due to failing to further limit the subject matter of the independent claim 1. Applicants have amended the dependent claims 2 and 3 to correct the dependency format. Based on the amended dependent claims, Applicants request the withdrawal of the claim objections.

Claims 1-6 were objected to due to informalities in the claim language. Applicants have amended claims 1-6 to correct the informalities. Based on the amended claims 1-6, Applicants request the withdrawal of the claim objections.

Claim Construction

Claims 2 and 3 were objected due to inappropriate claim construction. Claims 2 and 3 have been amended to address the claim construction issue. Based on the amendment, Applicants request the withdrawal of the claim construction objection.

Claim Rejections

Rejections under 35 U.S.C. §112:

Claims 1-7 were rejected under 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter.

a) Claim 1 was rejected as being indefinite for claiming both an apparatus and method steps. Claim 1 has been amended to address this discrepancy. Based on the amendment, Applicants respectfully request the withdrawal of the 112 rejection.

b) Claims 4, 5 and 7 were rejected due to unclear language used in the claims. Claims 4, 5 and 7 have been amended to provide clarity to the claim language. Based on the amendment, Applicants respectfully request the withdrawal of the 112 rejection.

c) Claims 4 and 5 were rejected due to the use of indefinite claim language. Claims 4 and 5 have been amended to provide clarity to the claim language. Based on the amendment, Applicants respectfully request the withdrawal of the 112 rejection.

d) Claims 1, 2, 3, 4, and 5 were rejected due to usage of terms that lack antecedent basis. Claims 1 – 5 have been amended to correct the deficiency. Based on the amendment, Applicants respectfully request the withdrawal of the 112 rejection.

Rejections under 35 U.S.C. §101:

Claim 1 was rejected as the claim was directed to neither a “process” nor a “machine”. Claim 1 has been amended to address the deficiency. Based on the amendment, Applicants respectfully request the withdrawal of the 101 rejection.

Rejections under 35 U.S.C. §102:

Claims 1-4 and 7 were rejected under 102(e) as being anticipated by Nickel et al. (U.S. Patent Publication No. 2003/0005068) (hereinafter “Nickel”). Applicant respectfully traverses this rejection.

Nickel teaches a method for solving a computationally intensive problem using a virtual supercomputer. The virtual supercomputer of Nickel includes a plurality of multipurpose workstations. The supercomputer and application software for solving the computationally intensive problem are adapted for minimum impact on the multipurpose workstations. The workstations may be used for performing other tasks as needed by primary users of the workstations. The computationally intensive problem is solved by the virtual supercomputer using any excess computational resources available on the multipurpose workstations. (See Abstract).

In Nickel, there is no suggestion or teaching of assigning a virtual machine or establishing a virtual layer for a physical machine. The only virtual concept being used in Nickel is the establishment of a network using “virtual” master computer/workstations and “virtual” slave computer/workstations. The virtual master computer is initiated by running a parallel virtual machine (PVM) master software on a workstation. The master computer, thus established, forms a super computer by establishing connections with as many other computers as possible. Each of the other computers, under the direction of the master computer, download the software, data and tasks associated with a computationally intensive problem and execute the task using the physical resources available at the slave computers. The slave computers are actual workstations and not virtual machines. Even though parallel virtual machine software is used to create this workstation network, the computationally intensive problem is run directly on the workstations using the resources of the workstations and not through any virtual layer.

This is different from the claimed invention. In the claimed invention, at least two physical machines, each with a plurality of resources, are connected to form a physical machine network. A virtual layer having at least one application is defined for each of the physical

machines in the physical machine network. One or more virtual machines are defined to operate at each virtual layer. The virtual machines run the application available at the virtual layer using resources from the underlying physical machines that are accessed through an interface, such as control program, system management process. The virtual machine is independent of the physical machine and its resources. The independency of the virtual machine from the physical machine makes it easy to relocate to any other physical machine without impacting the physical machine network infrastructure.

The virtual machines, as defined by the claimed invention, have many advantages. Using these virtual machines, applications can be executed without needing to understand the physical specification or physical limitation of the underlying physical machines. As a result, physical machine resources can be managed independently without impacting the virtual infrastructure. Resource requests are processed using a suitable interface which converts the request to any physical machine specific request. Thus, using virtual machines, networking of heterogeneous systems that provide varied resources requested by an application is enabled while providing a unique interface to a user through the virtual machine. Virtual machines also provide transparency to the underlying physical structure of the physical machines. Thus, using virtual machines, one is shielded from the intricate details of the physical machines thereby enabling easy replacement or switching of physical machines without affecting the virtual infrastructure. (See paragraph 0004, 0005, 0007, 0008 and 0009).

The workstations of Nickel are all associated with specific physical resources. When a slave workstation has to be replaced, added or deleted from the network, the network infrastructure is affected. The master computer has to reconfigure the network infrastructure, reassign the tasks to other workstations on the network and manage the available resources. (See Figures 1D, 2B, 3 and the corresponding description in the Specification of Nickel). This is different from the virtual machine infrastructure of the claimed invention. In the claimed invention, since the virtual machine is independent of the physical machines, any change to the

physical machine infrastructure is transparent to the virtual machine and to the application running on the virtual machine. (See paragraph 0005 of the claimed invention).

As can be seen from the above arguments, Nickel does not suggest or teach each and every element of the claimed invention. Applicants, therefore, submit that the claimed invention is novel over Nickel and request the withdrawal of the 102 rejection of independent claim 1. Claims 2-4 and 7 are dependent on the independent claim 1 and include all the limitations of the amended independent claim 1. Based on the arguments presented for independent claim 1, Applicants submit that claims 2-4 and 7 are patentably distinct to the extent independent claim 1 is distinct and request the withdrawal of the 102 rejection of the dependent claims 2-4 and 7.

Rejections under 35 U.S.C. §103:

Claims 5 and 6 were rejected under 103(a) as being unpatentable over Nickel in view of Adamovits et al (U. S. Patent No. 6,698,017) (hereinafter “Adamovits”). Applicants respectfully traverse this rejection.

Claims 5 and 6 are dependent on the amended independent claim 1 and include all the limitations of the independent claim 1. Adamovits teaches a method for migrating control over a processing element (processor) from an original software system to a replacement software system using a virtual machine. The virtual machine is activated during the migration and deactivated after the migration is completed. However, Adamovits does not cure the deficiency of Nickel where each of the physical machines (workstations) lacks a virtual layer. In fact, Adamovits suggests or teaches creating a virtual machine within a memory of the physical machine that is tied to physical structure of the physical machine. Combining Adamovits with Nickel would still not suggest or teach providing a virtual layer at each of the physical machines and assigning at least a virtual machine to the virtual layer at each physical machine wherein the virtual layer includes at least one application that can be executed by the virtual machine and wherein the virtual machine is independent of the physical machine.

Based on the above arguments, Applicants submit that the claimed invention is novel over the cited arts and request the withdrawal of the 103 rejection on claims 5 and 6. Applicants have additionally added new claims 8-13. Claim 8 describes a method for managing applications. The method includes establishing a communication link between at least two physical machines to define a physical machine network. The physical machines include a system management process to manage physical resources available at the corresponding physical machines. A virtual layer is defined for each physical machine. The virtual layer provides an interface to the physical machines to access the physical resources of the physical machines. Each virtual layer has a control program to communicate with the system management process. Services including at least one application are defined for specific ones of the virtual layer associated with the physical machine of the physical machine network. At least one virtual machine associated to selected physical machines is defined using the virtual layer, wherein the virtual layer associated with the service. Inventory of the physical machines and the virtual machines is monitored. The inventory identifies resources available at the physical machines and resources required at the virtual machines of the physical machine network. At least one of the virtual machines is assigned to a corresponding physical machine based on resource requirement of the application associated with the service. The virtual machine is independent of the corresponding physical machines.

Newly added claim 11 describes a method for managing applications. The method includes defining a physical machine network by communicatively connecting at least two physical machines. The physical machines have a system management process to manage physical resources available at the corresponding physical machines. A virtual layer is provided on each physical machine. The virtual layer includes at least an application that is executed using at least one of a plurality of virtual machines. A control program to manage the operation

of the plurality of virtual machines is associated to the virtual layer on each of the physical machines. The system management process is coupled to each virtual layer in the physical machine network. The coupling enables establishing a dialogue between the system management process and the corresponding control program of each virtual layer. The dialogue includes determining status of the physical machines and the plurality of virtual machines within the physical machine network, establishing resource availability at the physical machines and resource requirements of the plurality of virtual machines. Selected ones of the plurality of virtual machines are associated to the virtual layer of particular physical machines within the physical machine network based on the characteristic requirements of the application available at the virtual layer of the particular physical machines, wherein each of the plurality of virtual machines is independent of the corresponding physical machines.

As mentioned earlier, the references do not suggest or teach associating a virtual layer to each of the physical machines wherein one or more virtual machines operate. The virtual machines described herein are independent of the corresponding physical machines.

Accordingly, Applicants respectfully submit that the present Application is in condition for allowance. Applicants therefore respectfully request reconsideration of the outstanding rejections and a Notice of Allowance. If there are any additional charges, please charge Deposit Account No. 50-2652 (Order No.A279). The Examiner is invited to contact the undersigned at 650-427-3096 to discuss any additional changes the Examiner may feel is necessary in light of this Amendment.

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Respectfully submitted,
for VMware, Inc.

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